WHAT IS CLAIMED IS:

1. A composition comprising a biologically effective amount of at least a first tetraalkylammonium tetrathiomolybdate compound and a pharmaceutically acceptable excipient.

2. The composition of claim 1, wherein said composition comprises tetramethylammonium tetrathiomolybdate.

3. The composition of claim 1, wherein said composition comprises tetraethylammonium tetrathiomolybdate.

4. The composition of claim 1, wherein said composition comprises tetrabutylammonium tetrathiomolybdate.

5. The composition of claim 1, wherein said composition comprises tetrapropylammonium tetrathiomolybdate.

6. The composition of claim 1, wherein said composition is formulated for intravenous administration.

7. The composition of claim 1, wherein said composition is formulated for ophthalmic administration.

8. The composition of claim 1, wherein said composition is formulated for oral administration.

9. The composition of claim 1, further comprising at least a second, distinct therapeutic agent.

10. The composition of claim 9, further comprising a zinc compound.

11. The composition of claim 9, further comprising at least a second, distinct anti-angiogenic agent.

12. The composition of claim 11, further comprising at least a second anti-angiogenic agent selected from the group consisting of angiostatin, endostatin, trientine, pencillamine and zinc.

13. The composition of claim 9, further comprising at least a second, distinct anti-cancer agent.

14. The composition of claim 13, further comprising at least a second anti-cancer agent selected from the group consisting of a chemotherapeutic agent, radiotherapeutic agent, immunotoxin, anti-angiogenic agent, apoptosis-inducing agent, a distinct agent that binds copper and a zinc compound.

15. A composition comprising a pharmaceutically acceptable excipient and a tetraalkylammonium tetrathiomolybdate compound in which the alkyl groups protect the tetrathiomolybdate from oxidation upon exposure to air and moisture, thereby increasing the stability of the tetrathiomolybdate compound; wherein said tetraalkylammonium tetrathiomolybdate compound retains solubility and releases substantially biologically active tetrathiomolybdate and substantially biologically inert alkylammonium groups in aqueous solution.

16. A composition comprising a biologically effective amount of a tetraalkylammonium tetrathiomolybdate compound a pharmaceutically acceptable excipient; wherein said tetraalkylammonium tetrathiomolybdate compound is substantially stable in moist heated air for at least about 7 days; has a half life when exposed to air at room temperature of at least twice that of ammonium tetrathiomolybdate; is soluble to at least about 1mg/ml in water; and in aqueous solution releases tetrathiomolybdate having substantially intact copper binding properties.

17. A composition comprising a biologically effective amount of tetrapropylammonium tetrathiomolybdate and a pharmaceutically acceptable excipient.

18. A kit comprising, in at least a first container, a therapeutically effective amount of at least a first tetraalkylammonium tetrathiomolybdate compound and:

(a) a therapeutically effective amount of at least a second, distinct therapeutic agent; or

(b) at least one component of an assay system for determining serum ceruloplasmin levels.

19. The kit of claim 18, wherein said at least a first tetraalkylammonium tetrathiomolybdate compound is disposed in a pharmaceutically acceptable composition.

20. The kit of claim 18, wherein said at least a first tetraalkylammonium tetrathiomolybdate compound is tetrapropylammonium tetrathiomolybdate.

21. The kit of claim 18, wherein said kit comprises said at least a first tetraalkylammonium tetrathiomolybdate compound and said at least a second, distinct therapeutic agent.

22. The kit of claim 21, wherein said at least a second, distinct therapeutic agent is a zinc compound or at least a second, distinct anti-angiogenic agent.

23. The kit of claim 21, wherein said at least a second, distinct therapeutic agent is at least a second, distinct anti-cancer agent.

24. The kit of claim 21, wherein said at least a first tetraalkylammonium tetrathiomolybdate compound and said at least a second, distinct therapeutic agent are comprised within a single container.

25. The kit of claim 21, wherein said at least a first tetraalkylammonium tetrathiomolybdate compound and said at least a second, distinct therapeutic agent are comprised within distinct containers.

26. The kit of claim 18, said kit comprises said at least a first tetraalkylammonium tetrathiomolybdate compound and said at least one component of an assay system for determining serum ceruloplasmin levels.

27. The kit of claim 26, wherein said kit further comprises all components of an assay system for determining serum ceruloplasmin levels.

28. A method of treating or preventing a disease associated with aberrant vascularization, comprising administering to an animal having or at risk for developing a disease associated with aberrant vascularization a pharmaceutical composition comprising a therapeutically effective amount of at least a first tetraalkylammonium tetrathiomolybdate compound.

29. The method of claim 28, wherein said pharmaceutical composition comprises a therapeutically effective amount of tetrapropylammonium tetrathiomolybdate.

30. The method of claim 28, wherein said pharmaceutical composition is administered to said animal parenterally.

31. The method of claim 28, wherein said pharmaceutical composition is administered to said animal ophthalmically.

32. The method of claim 28, wherein said pharmaceutical composition is administered to said animal orally.

33. The method of claim 28, further comprising administering to said animal a therapeutically effective amount of at least a second, distinct therapeutic agent.

34. The method of claim 33, wherein said at least a second therapeutic agent is a zinc compound or at least a second, distinct anti-angiogenic agent.

35. The method of claim 28, wherein said animal has or is at risk for developing wet type macular degeneration.

36. The method of claim 28, wherein said animal has or is at risk for developing rheumatoid arthritis.

37. The method of claim 28, wherein said animal has or is at risk for developing cancer.

38. The method of claim 37, wherein said animal has cancer.

39. The method of claim 38, further comprising administering to said animal a therapeutically effective amount of at least a second, distinct anti-cancer agent.

40. The method of claim 38, further comprising subjecting said animal to surgery or radiotherapy.

41. The method of claim 28, wherein between about 10 mg and about 300 mg of said at least a first tetraalkylammonium tetrathiomolybdate compound is administered to said animal.

42. The method of claim 28, wherein said at least a first tetraalkylammonium tetrathiomolybdate compound is administered to said animal in an amount and for a period of time effective to reduce the level of copper in said animal to between about 10% and about 40% of the level of copper in said animal prior to administration of said at least a first tetraalkylammonium tetrathiomolybdate compound.

43. The method of claim 42, wherein said at least a first tetraalkylammonium tetrathiomolybdate compound is administered to said animal in an amount and for a period of time effective to reduce the level of copper in said animal to between about 10% and about 20% of the level of copper in said animal prior to administration of said at least a first tetraalkylammonium tetrathiomolybdate compound.

44. The method of claim 42, wherein a therapeutically effective amount of a copper binding agent is subsequently administered to said animal for a period of time effective to maintain the level of copper in said animal at about 10%-20% of the level prior to administration of said at least a first tetraalkylammonium tetrathiomolybdate compound.

45. The method of claim 44, wherein the subsequently administered copper binding agent is a thiomolybdate compound.

46. The method of claim 44, wherein the subsequently administered copper binding agent is a zinc compound.

47. The method of claim 42, wherein a loading dose of said at least a first tetraalkylammonium tetrathiomolybdate compound is first administered to said animal in an amount and for a period of time effective to initially reduce the level of copper in said animal to about 20%-40% of the level prior to administration, and wherein a maintenance dose of said at least a first tetraalkylammonium tetrathiomolybdate compound is subsequently administered to said animal in an amount and for a period of time effective to maintain the level of copper in said animal at about 10%-20% of the level prior to administration.

48. The method of claim 28, wherein the level of copper in said animal is indicated by the level of serum ceruloplasmin.

49. The method of claim 28, wherein said animal is a human subject.

50. A method of treating cancer, comprising administering tetrapropylammonium tetrathiomolybdate to an animal with cancer in an amount effective to exert an anti-cancer effect in said animal.